Event-Specific Earnings Management: Additional Evidence from US M&A Pre-and Post-SOX

Abstract[:]

We re-examine the motivation to manage earnings in US M&As, by investigating whether the enactment of SOX has affected pre-merger earnings management. Using a sample of over 700 completed M&As of US public firms during 1999-2008. Using quarterly reports, we track-down earnings management during the four quarters preceding the deal and consequently draw inferences about the implications of SOX on interim reporting practices. We find evidence of earnings management by non-cash acquirers, especially during the two to three quarters prior to the announcement date; this practice is more pronounced in the post-SOX period, suggesting that SOX simply lead to an earlier exercise of pre-merger earnings management. More interestingly, we reveal significant upward earnings management by targets in the last quarter prior to the deal, but only during the post-SOX era.

Keywords: *Sarbanes Oxley, M&As, Earnings Management, Abnormal Accruals, Method of Payment, Quarterly Reports.*

JEL Classification: *M41, M48, G34*

1. Introduction

Since the enactment of the Sarbanes-Oxley act (hereafter SOX) in 2002, the debate regarding its implications on corporate reporting and governance consequences has been on-going (see, for example, Ashbaugh-Skaife *et al.*, 2008; Madura and Ngo, 2010). The debate has recently extended to several research areas in financial reporting, such as earnings management (Cohen *et al.*, 2008) and in market efficiency and major business transactions, such as mergers and acquisitions (hereafter M&As) (Chelikani and D'Souza, 2011). This study contributes to this debate by examining earnings management in a structured sampling design of firms that engaged in M&As and by investigating how the magnitude of earnings management varies between the pre- and the post-SOX eras.

The mathematical detection of earnings management proxies, such as the abnormal patterns in accruals, *per se* does not carry significant and meaningful implications, unless earnings management is associated with potential underlying managerial motives. Examples of such motives include loss avoidance (see, for example, Gore *et al.*, 2007) as well as corporate events such as management buy-outs (Perry and Williams, 1994), seasoned equity offerings (Rangan, 1998; Teoh *et al.*, 1998) and M&As (for example see Erickson and Wang, 1999). In M&A deals each of two parties ultimately involved, seeks to maximise their own gains in a "*two-agent bargaining game under imperfect information*" (Hansen, 1987, p.76). Given the information asymmetries, and considering how critical the figures are, it is argued that each party of the transaction may have incentives to manipulate the numbers prior to closing the deal; this, however, is not a costless procedure (Erickson and Wang, 1999).

Acknowledgement: The authors are grateful for the anonymous reviewers and Prof. Khaled Hussainy (the editor of JFRA) for the valuable comments, from which the paper benefited a lot.

This study re-examines the motivation to manage earnings in firms engaged in M&As by addressing the question of whether firms' pre-merger earnings management after the enactment of SOX has been significantly different from its level in the pre-SOX era. More specifically, we explore the different patterns and timing of pre-merger earnings management as well as the differences in earnings management practices between the pre and post-SOX eras in public firms engaged in M&As (i.e. acquiring and target firms).

Our study contributes to the existing literature in a number of ways: First, it tests earnings management occurrences prior to deal announcement not only for the acquiring firms, but also for their targets. Second, by investigating a structured sample of merging firms, which have an *ex-ante* motivation to practice earnings management. By employing a sample that includes M&A deals before and after SOX was enacted, our study adds to the debate on the effectiveness of SOX in improving the credibility of financial reporting. Finally, by using quarterly reports, this study provides a track of the managerial discretion over accruals in the four successive quarters prior to a deal's announcement in order to precisely locate the timing of earnings management.

2. Literature Review

In a M&A deal, the target's ability to manage its earnings preceding a M&A relies on when it learns about an acquiring firm's intention to take it over (Botsari and Meeks, 2008). There is no standard timing of a target firm's awareness about an impending M&A. The leakage of information and market rumours surrounding a M&A can effectively increase the target firm's awareness about the emerging deal as frequently documented by the literature and empirically detected by abnormally high trading activity ahead of significant price movements of the target's share (Chou *et al.*, 2011). Unlike targets, acquirers normally have control over M&A timing and are able to plan their strategic investment decisions in advance. Therefore, as timing is not an issue for acquirers -and assuming they have the motivation to manage earnings- they should theoretically be more effective in doing so compared to their targets (Erickson and Wang, 1999; Alsharairi *et al.*, 2015)

Firms' motives to merge with and acquire other firms are numerous and the basic underlying motives include expansion and growth, tax avoidance and/or financial motives. It is sometimes difficult to establish what the real reasons for a merger truly were, since the stated reasons at the time may not reveal the full truth (Gaughan, 2005). However, M&A activity is repeatedly justified by managers who argue that individual firms can efficiently generate greater benefits to their shareholders if they combine into one larger entity, thus generating synergies (Koumanakos *et al.*, 2005). Therefore, making the M&A attractive to the shareholders of both involved entities is another managerial concern.

According to Hansen's (1987) theory of the management's choice of payment method, as share prices are influenced by earnings management, an acquirer's motivation to manage earnings differs depending on the use of equity in the payment structure (hereafter non-cash deals).The year 2002 – when SOX came into effect- was marked as beginning of a new era of corporate reporting and governance practices. Since the passage of SOX, researchers from both the academia (see, for example, Lobo and Zhou, 2006; Ashbaugh-Skaife *et al.*, 2008; Cohen *et al.*, 2008; Lobo and Zhou, 2010) and the accounting profession (see, for example, Chambers *et al.*, 2010) attempted to answer the controversial question of whether financial reports have become more credible or indeed, more accurate. As the ramifications of SOX are numerous, the discussion henceforth is limited to the empirical evidence on SOX and its implications specifically toward earnings management and M&As.

Employing a large dataset of firms two years before and two years after SOX, Lobo and Zhou (2006) investigated the change in managerial discretions over financial reporting. They report a significant decline in abnormal accruals during the post-SOX period and a shift towards more conservative accounting practices. These findings were confirmed for dually listed public firms on Canadian and US stock exchanges for the same event window (Lobo and Zhou, 2010). Ashbaugh-Skaife *et al.*

(2008) also investigated the impact of SOX requirements for reporting the effectiveness of internal control and found similar evidence, suggesting that the requirements of SOX do improve the quality of accruals.

Adding to the above empirical studies, Chang and Sun (2009) and Iliev (2010) investigated whether the provisions of SOX have in fact improved the quality of earnings, as proxied by the level of earnings management. Their findings advocate the belief that corporate governance functions required under SOX have improved the quality of earnings (i.e. it has limited the practice of earnings management) as measured by the level of signed or unsigned (i.e. absolute value) discretionary accruals.

In contrast to the literature that seems to support the mitigating effect of SOX on earnings management, Wilson (2009) and Ghosh *et al*. (2010) found no increase in the quality of reported earnings since the enactment of SOX, even after controlling for factors believed to influence discretionary accruals (including corporate governance). Also, Chambers *et al*. (2010) surveyed the recent research on the effectiveness of SOX and, rather unconvincingly, concluded that the quality of the financial reporting environment has in fact improved. However, they posit that "[t]he research is not yet at the point where an overall cost/benefit comparison can be made" (Chambers *et al*., 2010p.27). Consistently, a recent study by Gavious and Rosenboim (2013) documents that post-SOX earnings management is significantly less negative than during the pre-SOX scandals. Therefore, they argue that such decrease in abnormal accruals has occurred as a response to the scandals, not as a consequence of the passage of SOX per se. Rutledge et al. (2014) report that earnings management of only those companies audited by the Big Four has actually declined during the post-SOX period. Whereas, earnings management of firms audited by non-Big Four auditors do not show a decline in the post-SOX period.

Zang (2012) reports that as accrual earnings management is more constrained since the enactment of SOX, firms may rely on accrual earnings management to a lesser extent. Moreover, accrual earnings management is adopted to a greater extent compared to real activities manipulation when real-earnings management is more costly for firms. Although M&A activity was not explicitly dealt with in SOX, there is evidence that M&As have been greatly influenced since SOX. Mark Jamrozinski, partner and co-chair of Deloitte's private equity practice, comments on the fashion of the focused due diligence which has evolved in the post-SOX era writing that "*M&A due diligence has evolved from the financial verifications and skeleton hunts of the past into a focused, integrated approach that proves valuable in assessing the thesis behind doing a transaction* (Jamrozinski, 2009, p.1)." In addition, Madura and Ngo (2010) provide evidence that since SOX, M&A candidates tend to rely heavily on financial and legal advisors, consequently reducing the informational asymmetry between acquirers and targets.

3. Hypotheses Development

3.1. ***The target's side***

Getting closer to the transaction itself, the managers of each party have proprietary information about their own firms, but *asymmetric information* about the state and value of the other, in a typical *market for lemon's* problem (Akerlof, 1970).Under such conditions of imperfect information the acquiring firm's managers believe that the target will accept only an offer that is greater than its *real* value. Since acquirers may not discriminate those targets which are fairly priced, assuming all targets in the M&A market are *lemons* and normally overpriced, they will consequently discount the target's value to avoid adverse selection. As a reaction, the target's management is motivated to manage earnings and drive its market price upward – in order to 'make–up' the discount that the acquirer will apply. Hence, the first hypothesis in this study is formulated as follows:

Hypothesis 1*: Target firms manage their earnings upward prior to the announcement date of a M&A deal.*

3.2. *The acquirer's side*

Pre-merger earnings management implies two incentives to the acquiring firm: first, the acquirer has an incentive to obtain capital at a lower cost (Alsharairi and Salama, 2012), so the acquirer's management attempts to reduce the number of shares issued to the target and retain stronger control. Second, the acquirer will try to mitigate the post-merger diluting effect on his shareholders' voting and cash-flow rights (i.e. their EPS) by minimising the number of shares issued to the target's shareholders during the exchange (Erickson and Wang, 1999). Hence, the non-cash acquirers are expected to manage earnings prior to a M&A deal and, therefore, the following hypothesis is proposed:

Hypothesis 2a*: Acquiring firms manage their earnings prior to the announcement date of a M&A deal if they offer equity shares in the deal.*

Correspondingly, cash acquirers do not have the obvious motivation to manage their earnings, which makes it a costly process that carries no economic return. Hence, *a priori* according to the theoretical framework of this study, it should be expected that no pre-merger earnings management by cash acquirers should be undertaken:

Hypothesis 2b*: Acquiring firms do not manage their earnings prior to the announcement date of a pure cash M&A deal.*

3.3. *Sarbanes-Oxley and earnings management*

The overall theoretical reasoning, based on the purpose of SOX and previous empirical evidence analysed in the literature review section, can establish the *a priori* suggestion that the implementation of SOX may enhance the containment of earnings management in a M&A context. Therefore, the following hypothesis can be formulated:

Hypothesis 3*: The magnitude of pre-merger earnings management by firms engaged in M&A in post-SOX deals is significantly lower than those in pre-SOX period.*

This hypothesis can be broken down into two sub-hypotheses as follows:

Hypothesis 3a*: The magnitude of pre-merger earnings management by target firms in post-SOX deals is significantly lower than those in pre-SOX period,*

and

Hypothesis 3b*: The magnitude of pre-merger earnings management by acquirers in post-SOX deals is significantly lower than those in pre-SOX period.*

4. Methodology

4.1. *Earnings Management Proxy*

Earnings management is examined for each of the acquirers and targets in each quarter for the last four quarters preceding the event of M&A - identified by the announcement date of the deal. Specifically, to identify the timing of earnings management decisions for a firm, abnormality in accruals is investigated in the quarterly earnings in quarters *j-1* to *j-4* from the announcement date of

M&A, hereafter EM_{j-1}, EM_{j-2}, EM_{j-3} and EM_{j-4}, where j is the quarter in which the firm was announced as being involved in a M&A deal. As a robustness check, we also test the cumulative abnormal accruals for two quarters (*C2*), three quarters (*C3*) and four quarters (*C4*) before completing the M&A.

Interim reporting, in contrast with annual reports, allows firms to plan earnings management through current accruals more efficiently. For instance, a firm's management may use its accrual reserves in doses over more than one quarter (Das *et al.*, 2009). The current accruals are computed using the changes in the non-cash working capital, the balance sheet method[1] (Pungaliya and Vijh, 2008) as follows:

$$CAC_i = \Delta CA_i - (\Delta CL_i - \Delta STD_i) - \Delta CASH_i \quad (41)$$

Where:
CAC: denotes the current accruals,
ΔCA: is the quarterly change in current assets (*Compustat* XPF mnemonic[2] code ACTQ),
ΔCL: is the quarterly change in current liabilities (mnemonic code LCTQ),
$\Delta CASH$: is the quarterly change in cash (mnemonic code CHEQ),
ΔSTD: is the quarterly change in current maturities of long term debt and other short term liabilities included in current liabilities (mnemonic code DLCQ), and
i: denotes the firm index which could be either an acquirer or a target.

A cross-sectional industry-performance-matched accruals model is used in this study, similar to the research designs of Louis (2004), Gong *et al*. (2008) and Atieh and Hussain (2012). The core of this model emanates from the work of Dechow *et al.*'s (1995) modified Jones' (1991) model after considering Kothari *et al*.'s (2005) non-linear control for performance.[3]

The industry-performance matching procedure is achieved in this model by building matching portfolios using the universe of firms in each quarter. More specifically, data of all firms available on *Compustat* is clustered by calendar years and quarters. In each quarter, all firms are categorised into industry sectors based on their 2-digit SIC. In each industry, all firms are ranked according to their performance - defined as ROA of same quarter last year - to form five quintiles.

Before ranking firms portfolios into quintiles, three procedures are followed for stronger robustness and to reduce measurement error at this stage (Gong *et al.*, 2008); discarding the universe outliers represented by observations that have the highest and the lowest 0.1 percent ROA, dismissing each observation with the absolute value of current accruals divided by lagged total assets greater than one ($\left|CAC_j/TA_{j-4}\right| > 1$) to reduce the likelihood of including observations with extreme values due to improper data entry in the database, and finally excluding portfolios with less than 20 observations.

Each portfolio of peer firms is used as a firm's control in order to estimate the parameters that are used in calculating the expected current accruals for each firm in the same portfolio. Therefore, the following cross-sectional model is estimated for each portfolio constructed by the aforementioned procedure:

$$\frac{CAC_{i,j}}{TA_{i,j-4}} = \sum_{q=0}^{3} \lambda_{1+q} Q_{1+q,i,j} + \lambda_5 \left(\frac{[\Delta REV_{i,j} - \Delta AR_{i,j}]}{TA_{i,j-4}}\right) + \lambda_6 \left(\frac{CAC_{i,j-1}}{TA_{i,j-4}}\right) + \lambda_7 \left(\frac{PPE_{i,j}}{TA_{i,j-4}}\right) + \varepsilon_i \quad (2)$$

Where:

Q_q: is a dummy variable to control for seasonality, takes 1 if the deal is announced in quarter q prior to merger announcement and 0 if the otherwise,

ΔREV: is the quarterly change in sales (code REVTQ),
ΔAR: is the quarterly change in accounts receivables (RECTQ),
PPE: is the gross amount of property, plant and equipment in a quarter (PPENTQ),
TA_{j-4}: denotes the total assets in the same quarter last year (ATQ), and
ε: denotes the residual term of the regression model.

To reduce potential heteroskedasticity in residuals, all variables are scaled by the total assets in the same quarter last year as a deflating procedure, following the recommendation of Kothari *et al*. (2005).

4.2. ***Sampling and Data***

4.2.1. *Sample Construction*

The sample includes completed M&A deals that were announced in the ten year period (from 01/01/1999 to 31/12/2008)[4] and obtained according to the following criteria:

1. Deals are completed between US acquirers and domestic targets. Excluding multi-national M&A deals is necessary to avoid the differences in the institutional settings and reporting standards (Erel *et al.*, 2012);
2. Acquirers and targets must be publicly listed companies for two reasons: to guarantee that both acquirers and targets were subject to SOX provisions in post-SOX period and to mitigate the differences in the level of information asymmetry between the acquirer and the target;[5]
3. Deals in which any acquirers or targets in the financial sector (SIC code between 6000-6999) are excluded. This is a common practice in the literature since the financial sector is subject to special regulations (see, for example, Erickson and Wang, 1999; Gong *et al.*, 2008);
4. The deal value should be greater than or equal to $1 million to exclude all deals of negligible sizes, in which the economic incentive to manage earnings is less likely (Erickson and Wang, 1999);
5. A controlling ownership interest must be acquired in the deal (i.e. the acquirer owned less than 50% of the target before the deal and greater than 50% by completing the deal).

The final sample consists of 704 M&A deals making 1,408 firm observations of acquirers and targets that comply with the sampling procedure as shown in Table 1.

The required data are obtained from different sources including; *Thomson ONE Banker* and *Compustat*. *Thomson ONE Banker* is used for sampling and to obtain deal related data. However, earnings management and other quarterly accounting data are available on *Compustat North America Fundamental Quarterly* dataset by *Wharton Research Data Service* (WRDS).

[Insert Table 1 here]

Quarterly accounting data items are retrieved for the universe of firms available on *Compustat* for the years 1997 to 2008, which result in 212,447 firm-quarter observations clustered into 3,445 industry-performance matched portfolios for all calendar quarters for the period.

5. Results

5.1. ***Descriptive Statistics***

Table 2 demonstrates the characteristics of the sample comprising of 704 deals. The total sample is roughly evenly distributed into 378 pre-SOX deals and 326 post-SOX deals (53.7 percent and 46.3 percent respectively). A control group is formed of the pre-SOX deals and matched to a subsample of post-SOX deals for testing the third hypothesis, which compares earnings management in both eras.

Target Relatedness in Table 2 refers to matched 2-digit SIC codes of the acquirer and the target firms in a given deal.

[Insert Table 2 here]

Table 3 presents a comparison between the targets and their acquirers as well as the deals' characteristics pre- and post-SOX.

Comparing the ROA median value in pre-SOX (3.9 percent) with post-SOX (4.9 percent) does not indicate a high variation as the median is less sensitive to extreme values of acquirers' ROA. In terms of *Leverage*, the aggregate sample of acquirers seems more homogeneous given that sample mean (standard deviation) in pre-SOX is 43.32 percent (22.5 percent) and in post-SOX is 45.36 percent (25.1 percent) with roughly a similar median of 43.5 percent in both subsamples. Hence, it seems unlikely that the results are driven by the variations in either the firms' performance or leverage.

[Insert Table 3 here]

5.2. ***Earnings Management on the Acquirer's Side***

The abnormal accruals in the overall sample of acquirers show an increasing trend over the four quarters prior to the M&A announcement, hitting a peak in the second pre-merger quarter (*j-2*) as illustrated in Figure 1. The results for the aggregate sample of acquirers in Panel A of Table 3 shows that EM_{j-2} has the highest mean (0.3952) and the lowest standard deviation (4.666), while EM_{j-4} has the lowest mean of abnormal accruals (-0.2247) with the highest standard deviation (6.013).

[Insert Figure 1 here]

When the acquirers' sample is separated into pre- and post-SOX subsamples, the mean abnormal accruals in all four quarters prior to the M&A seems to be much higher in the post-SOX period when compared to the pre-SOX period.

Figure 1 indicates that acquirers used to aggressively inflate their abnormal accruals in quarter *j-2* in the pre-SOX era, while in the post-SOX time acquirers seem to consider earnings management earlier than before, up to three quarters prior to announcing the M&A itself.

From Table 4, the t-values of the mean abnormal accruals in the second quarter (*j-2*) for the total sample (0.395), as well as for the post-SOX sample (0.511), indicate significant earnings management at a 5 percent confidence interval whereas there is no significant evidence of abnormal accruals found in the pre-SOX subsample. EM_{j-3} is not significant at the total sample level.

Although acquirers' mean abnormal accruals could exert negative values especially in the earlier quarters prior to a M&A, the acquirers' mean cumulative abnormal accruals up to four quarters have always had positive values in the sample. However, the mean cumulative abnormal accruals over the past four quarters prior to a M&A (*C4*) in the post-SOX era has a much higher value when compared to pre-SOX times which are (1.4038) and (0.1154) respectively.

[Insert Table 4 here]

The results in Table 4 only show a significant mean of 0.4869 for the post-SOX sample. This indicates that managers' attitude toward earnings management has shifted in the post-SOX era as they do not wait until *j-2* to start working out their reported earnings but rather they start inflating the accruals one quarter earlier (i.e. since *j-3*). Moreover, the mean cumulative abnormal accruals *C2* are significant at the 5 percent confidence interval for both the total sample and the post-SOX sample.

The analysis for *C3* provides further evidence of early earnings management during the current post-SOX period. Even though the total sample mean (0.8589) of *C3* is significant, it is not significant in the pre-SOX sample, but the post-SOX sample mean of *C3* (1.4107) is very significant with a positive median (0.1948). Moreover, the cumulative abnormal accruals proxy *C4* has a significant positive mean value (1.4038) in the post-SOX subsample.

Table 5 shows that the two-sample mean differentials (i.e. post-SOX minus pre-SOX values) are positive since all earnings management proxies show a higher abnormal accruals mean for the post-SOX subsample. However, the results suggest that EM_{j-3} and *C3* are higher in the post-SOX time due to earlier earnings management.

[Insert Table 5 here]

5.2.1. *Analysing the segregated samples by the method of payment*

Figure 2 illustrates the acquirers' mean abnormal accruals behaviour pre- and post-SOX after separating the acquirers sample into pure cash versus non-cash acquirers. By comparing Figure 2 with the previous graph of the overall sample in Figure 1, it can be seen that the same trend of earnings management patterns as described earlier for the overall sample holds only for firms which use equity in their payment method (i.e. non-cash acquirers), as shown in graph B of Figure 2. Non-cash acquirers in the post-SOX sample seem to begin managing their earnings early, starting in quarter *j-3* reaching the maximum mean of 0.7725, while pre-SOX non-cash acquirers maximise their abnormal accruals in quarter *j-2* with a maximum mean of only 0.3668. Conversely, this does not ring true for pure cash acquirers as their pre-merger abnormal accruals curve in graph A of Figure 2.

[Insert Figure 2 here]

Furthermore, the levels of cumulative abnormal accruals are also higher for non-cash acquirers in general, and for those relating to the post-SOX era in particular.The analysis of the cash acquirers subsample as reported in Panel A of Table 6 reveals that for all earnings management proxies, the mean value of abnormal accruals is not significantly different from zero either for the total sample, the pre-SOX sample or indeed for the post-SOX sample. This finding is consistent with the predictions of hypothesis H_{2b}. Therefore, the null hypothesis H_{02b} in this study can be rejected since no statistical evidence is found to support (H_{02b}: $\mu_{EM\ (Cash\ acquirers)} >$ or < 0).

On the other hand, Panel B of the same table reveals some evidence for earnings management by non-cash acquirers in the total subsample as well as in the pre- and post-SOX categories, despite the noted differences in the magnitude, timing and significance among the categories. In the total subsample of non-cash acquirers, the one-sample *t-test* (*Wicoxon-Z test*) for EM_{j-2}, *C2* and *C3* all show significant positive means (medians) of 0.5163 (0.2465), 0.8168 (0.4037) and 1.0886 (0.6739) respectively.. Therefore, the null hypothesis (H_{02a}: $\mu_{EM\ (Non\text{-}cash\ acquirers)} = 0$) can be rejected. Furthermore, the alternative hypothesis (H_{A2a}: $\mu_{EM\ (Non\text{-}cash\ acquirers)} > 0$) can be accepted for the proxies EM_{j-2}, *C2* and *C3*.

The above reported findings provide robust evidence that managers at non-cash acquirers adopted accruals-increasing techniques around two to three quarters prior to announcing the M&A deal.

[Insert Table 6 here]

The mean values, shown in Panel B of Table 6, for each of the earnings management proxies, EM_{j-2} (0.6982) and *C2* (1.1966), are significantly different from zero at the 5 percent confidence interval while and the proxies EM_{j-3} (0.7725) and *C4* (1.5960) means are significant at the 10 percent confidence interval. Additionally, the *C3* proxy has a mean value of 1.9447 which is very significant at 1 percent confidence interval with a robust positive median of 0.820 (Wilcoxon-Z= 2.31).

Interestingly, the one-sample *t-test* for the pre-SOX category of non-cash acquirers, as shown in Panel B of Table 6, reveals strong results for the post-SOX categories. Although EM_{j-1}, EM_{j-2}, $C2$ and $C3$ all have positive means (0.310, 0.3668, 0.4953 and 0.2146, respectively), none are significant. However, the Wilcoxon-Z scores of the positive median values of EM_{j-1} (0.2548), EM_{j-2} (0.7031) and $C2$ (0.7654) indicate significance at the 10 percent confidence interval, which suggests a late (i.e. closer to the deal's announcement date) attempt to inflate pre-merger earnings. Further, the pre- versus post-SOX mean differences for all earnings management proxies are positive, as shown in Table 7. However, the null hypothesis (H_{03b}: $\mu_{\text{EM pre-SOX (Non-cash acquirers)}} = \mu_{\text{EM post-SOX (Non-cash acquirers)}}$) can be rejected for the differences of the proxies EM_{j-3} with a mean difference of 1.0588, and $C3$ with a mean difference of 1.7301. Therefore, the alternative hypothesis (H_{A3b}: $\mu_{\text{EM pre-SOX (Non-cash acquirers)}} < \mu_{\text{EM post-SOX (Non-cash acquirers)}}$) can be accepted.

[Insert Table 7 here]

Comparing the findings from the simultaneous analysis of the aggregate and segregated samples highlights the relevance and the importance of the stratification procedure through considering the payment method, when testing an earnings management hypothesis in a M&A setting. Furthermore, the pre- and post-SOX investigations of earnings management metrics show a greater magnitude, higher significance and an earlier exercise of accrual-inflating techniques in the post-SOX period. Additionally, there is some evidence for unexpected positive mean differentials of abnormal accruals between pre-SOX and post-SOX categories.

5.3. ***Earnings Management on the Target's Side***

Analysing the targets within the sample indicates that the mean values of abnormal accruals over the last four pre-merger quarters seem to generally decline until just before the very last quarter prior to the announcement date of M&A deal (quarter *j-1*) as exhibited in Figure 3. The resultant curves for the total sample and post-SOX category are U shaped and they, interestingly, look like a complete opposite to the acquirers' curves of pre-merger abnormal accruals in Figure 1.

At the overall sample level, the descriptive statistics reported in Panel C of Table 3 show that the mean abnormal accruals are highest in the quarter *j-4* with a value of 0.8193 and a standard deviation of 6.2526. On the other hand, EM_{j-2} has the lowest mean value of abnormal accruals (-0.2253) with the highest standard deviation (6.8639). However, the results presented in Table 8 reveal that EM_{j-4} is the only earnings management proxy that has a positive mean (0.8193) significantly different from zero, at a 5 percent confidence interval. Its median value (0.383) is significantly positive with a Wilcoxon-Z value of 2.43.

[Insert Figure 3 here]

After splitting the targets sample into the pre- and post-SOX categories, the results show there are more significant proxies of earnings management. At times, the results indicate a dramatic shift in the direction of the abnormal accruals over a time window of four pre-merger quarters.

[Insert Table 8 here]

The results of pre-SOX category of targets show that most of those statistically significant earnings management proxies have negative mean (median) values, as shown in Table 8. However, EM_{j-4} has the only positive mean (median) value of 1.2252 (0.4519), which is significant at the 10 percent confidence interval.

In contrast, all earnings management proxies in the post-SOX category are positive. Additionally, each one, except for EM_{j-4}, have much higher mean and median values when compared to those of

pre-SOX era as reported in Table 8. Although each of the proxies EM_{j-1}, *C2* and *C4* has a mean value significantly different from zero, the evidence concerning earnings management in quarter *j-1* is very important because it most likely is indicating that there is an intentional accruals manipulation due to being approached by the acquirer.

These results indicate that the first null hypothesis (H_{01}: $\mu_{EM\ (Targets)} = 0$) can be rejected while the alternative hypothesis (H_{A1}: $\mu_{EM\ (Targets)} > 0$) can be accepted for the mean value (0.8222) of EM_{j-1} in the post-SOX category at a 10 percent confidence interval. The median value (0.7033) of EM_{j-1} is also significant at the 5 percent confidence interval indicating robustness.

[Insert Table 9 here]

Holding the pre-SOX category of targets as a control group, an awakening shift in targets' practices toward more aggressive earnings management is noticed in post-SOX targets. More specifically, abnormal accruals for the pre-SOX group are negative on average for the past three pre-merger quarters, while the image appears completely opposite after the enactment of SOX onwards. This positive shift in targets' earnings management behaviour is reported in Table 9 in which the results are evaluated specifically concerning the difference between pre- and post-SOX for all earnings management proxies.

The results of testing the null hypothesis (H_{03a}: $\mu_{EM\ pre\text{-}SOX\ (Targets)} = \mu_{EM\ post\text{-}SOX\ (Targets)}$) in Table 9 confirm the observed positive shift in the proxies EM_{j-1}, *C2* and *C3*. The null hypothesis (H_{03a}) can be rejected for these proxies while the alternative hypothesis (H_{A3a}: $\mu_{EM\ pre\text{-}SOX\ (Targets)} < \mu_{EM\ post\text{-}SOX\ (Targets)}$) can be accepted at the 5 percent confidence interval level for the proxies EM_{j-1} and *C3* with mean differences of 1.5541 and 2.3644 respectively, and at the 1 percent level for the proxy *C2* and the respective mean difference of 2.0243. This inference is robust as it holds under the *Wilcoxon-Z* test at a confidence interval of 1 percent for the proxies *EM j-1* and *C3* and at the 5 percent level for *C2*.

The overall results concerning the target clearly show there has been a dramatic change in the magnitude as well as the direction of abnormal accruals. The proposition that SOX has given targets a greater capability of manipulating their earnings in the very last quarter before announcing a M&A does not have any theoretical foundations and may be inaccurate to posit. However, the indirect call of SOX for more due diligence and a stronger use of M&A advisors (see Madura and Ngo, 2010) may have resulted in a longer duration for the deal's to complete (which is 3 months on average) while there may also have been an effect for more efficient management in influencing EM_{j-1}.

Despite the fact that this study is using an *ex post* sample of targets, the intent of their respective managerial teams towards the acquisition (and therefore toward pre-merger earnings management) is still not easy to anticipate in terms of timing and therefore is subsequently not easy to control for. In other words, a M&A proposal could be an absolute surprise to some targets, while some other firms in the sample could be already working out their reports to boost their acquisition candidacy, as suggested by Meisel (2006). Therefore, an active decision by the firm's management team to increase their firm's acquisition attractiveness could be a motive to conduct early earnings management, which may explain the observed abnormal accruals in periods earlier than quarter *j-1*.

To sum up, the documented results indicate that in the post-SOX era, non-cash acquirers begin pre-merger upwards earnings management in an earlier quarter than in the pre-SOX era. Further, the findings indicate that in the quarters prior to the takeover, targets engage in more aggressive upwards earnings management in the post-SOX era.

6. Conclusion

This paper examines pre-merger earnings management in pre- and post-Sarbanes-Oxley eras over four quarters prior to the M&A announcement date. There are a number of contributions to the relevant literature presented by this paper. First, it reports the existence of earnings management for each of the last four quarters prior to the deal announcement not only for the acquiring firms, but also for their targets concurrently by using a sample that includes M&A deals before and after SOX was enacted. Second, it adds to the on-going debate of the effectiveness of SOX in improving the credibility of financial reporting by investigating a non-random (i.e. structured) sample of firms that have the motivation to practice earnings management – merging firms. Finally, by using quarterly reports, which are available by the US reporting environment, this study makes a further twofold contribution. On the one hand, quarterly statements are superior to annual ones in terms of their timeliness. This study provides a track of the accruals in the previous four successive quarters prior to a deal's announcement in order to precisely locate the timing of manipulating earnings. Since quarterly statements are not audited by an external auditor unlike annual reports, this study provides an insight to some implications of SOX on the interim reporting practices, as Ashbaugh-Skaife *et al*. (2008) previously suggested for future research

The findings of this study are consistent with those of Erickson and Wang (1999), Louis (2004) Baik *et al*. (2007) and Botsari and Meeks (2008) reporting significant evidence of upward pre-merger earnings management by non-cash acquirers, which use their own shares in the deal's payment structure, while, as expected, no evidence of pre-merger earnings management is found by cash acquirers since they lack the motivation to influence their share value before completing the deal. Earnings management is most evident in the second and the third quarter before the deal.

We report evidence that in the post-SOX era, non-cash acquirers begin pre-merger upwards earnings management in an earlier quarter than in the pre-SOX era. Even when acquirers are not separated based on the payment method, significant evidence of per-merger earnings management is found similar to the results of Koumanakos *et al*. (2005). Consistent with Chahine *et al*. (2011), the overall evidence in this study does not support the argument that the containment of earnings management improved in the post-SOX era when compared to the pre-SOX era (which is argued by a number of studies such as, Lobo and Zhou, 2006; Cohen *et al.*, 2008).

Further, our evidence indicates that in the quarters prior to the takeover, targets engage in more aggressive upwards earnings management in the post-SOX era. It is noted that the ability of target firms to manage earnings before M&A has been a controversial issue in literature, not because they lack the incentive to do so as most would agree targets would certainly have a motive to influence their premerger value, but rather because of a time constraint (Easterwood, 1998; Erickson and Wang, 1999; Meisel, 2006; Ben-Amar and Missonier-Piera, 2008). However, targets cannot systematically predict the time of their M&A candidacy, which inevitably varies considerably, because M&A transactions occur in a sporadic manner.

One of the limitations of this study is assuming that firms have fully adopted SOX in the post-SOX period by ignoring the fact that SOX implementation went through a gradual implementations for its articles.

References

Akerlof, G. A. (1970), "The Market for 'Lemons': Quality Uncertainity and the Market Mechanism", *Quarterly Journal of Economics*, **84**(3): 488-500

Alsharairi, M., Black, E.L., Hofer, C. and Al-Hamadeen, R. (2015) "The Post-merger Performance of the European M&As: Does Pre-merger Earnings Management Matter?" *Corporate Ownership and Control*, **13**(1): 994-1005

Alsharairi, M. and A. Salama (2012), "Does High Leverage Impact Earnings Management?: Evidence from Non-cash Mergers and Acquisitions",*Journal of Financial and Economic Practice*, **12**(1): 17-33

Ashbaugh-Skaife, H., D. W. Collins, J. W. R. Kinney and R. LaFond (2008), "The Effect of SOX Internal Control Deficiencies and Their Remediation on Accrual Quality", *Accounting Review*, **83**(1): 217-250

Atieh, A. and S. Hussain (2012), "Do UK firms manage earnings to meet dividend thresholds?", *Accounting and Business Research*, **42**(1): 77-94

Baik, B., J.-K. Kang and R. M. Morton (2007), "Earnings Management in Takeovers of Privately Held Targets", Working Paper No. 1013639, SSRN Retrieved on May 9th, 2009, from http://ssrn.com/paper=1013639

Ben-Amar, W. and F. Missonier-Piera (2008), "Earnings management by friendly takeover targets", *International Journal of Managerial Finance*, **4**(3): 232-243

Botsari, A. and G. Meeks (2008), "Do Acquirers Manage Earnings Prior to a Share for Share Bid?", *Journal of Business Finance & Accounting*, **35**(5/6): 633

Chahine, S., J. D. Arthurs, I. Filatotchev and R. E. Hoskisson (2011), "The Effects of Venture Capital Syndicate Diversity on Earnings Management and Performance of IPOs in the US and UK: An Institutional Perspective", *Journal of Corporate Finance*, **18**(1)

Chambers, D., D. R. Hermanson and J. L. Payne (2010), "Did Sarbanes-Oxley Lead to Better Financial Reporting?", *CPA Journal*, **80**(9): 24-27

Chang, J. C. and H. L. Sun (2009), "Crossed-Listed Foreign Firms' Earnings Informativeness, Earnings Management and Disclosures of Corporate Governance Information Under SOX", *International Journal of Accounting*, **44**(1): 1-32

Chelikani, S. and F. D'Souza (2011), "The Impact of Sarbanes-Oxley on Market Efficiency: Evidence from Mergers and Acquisitions Activity", *International Journal of Business & Finance Research*, **5**(4): 75-88

Chou, H.-I., G. Y. Tian and X. Yin (2011), "Rumors of Mergers and Acquisitions: Market Efficiency and Markup Pricing", *In B. Balachandran (Ed.), Finance and Corporate Governance Conference 2011*, La Trobe University, Bundoora, Australia

Cohen, D. A., A. Dey and T. Z. Lys (2008), "Real and Accrual-Based Earnings Management in the Pre- and Post-Sarbanes-Oxley Periods", *Accounting Review*, **83**(3): 757-787

Das, S., P. K. Shroff and H. Zhang (2009), "Quarterly Earnings Patterns and Earnings Management", *Contemporary Accounting Research*, **26**(3): 797-831

Dechow, P. M., R. G. Sloan and A. P. Sweeney (1995), "Detecting Earnings Management", *Accounting Review*, **70**(2): 193-225

Easterwood, C. M. (1998), "Takeovers and Incentives for Earnings Management: an Empirical Analysis", *Journal of Applied Business Research*, **14**(1): 19

Erel, I., R. C. Liao and M. S. Weisbach (2012), "Determinants of Cross-Border Mergers and Acquisitions", *Journal of Finance*, **67**(3): 1045 - 1082

Erickson, M. and S.-w. Wang (1999), "Earnings management by acquiring firms in stock for stock mergers", *Journal of Accounting & Economics*, **27**(2): 149

Gaughan, P. A. (2005), Mergers: What Can Go Wrong and How to Prevent It, John Wiley & Sons, Inc.: New Jersey

Gavious, I., and Rosenboim, M. (2013), "The Disciplining Role of the Market Versus Government Regulation: The Case of Sarbanes–Oxley and the Earnings Quality of M&A Targets", *American Law & Economics Review*, 15(1): 300-332

Ghosh, A., A. Marra and D. Moon (2010), "Corporate Boards, Audit Committees, and Earnings Management: Pre- and Post-SOX Evidence, *Journal of Business Finance & Accounting*, **37**(9-10): 1145-1176

Gong, G., H. Louis and A. X. Sun (2008), "Earnings management, lawsuits, and stock-for-stock acquirers' market performance", *Journal of Accounting & Economics*, **46**(1): 62

Gore, P., P. F. Pope and A. K. Singh (2007), "Earnings management and the distribution of earnings relative to targets: UK evidence", *Accounting and Business Research*, **37**(2): 123-149

Hansen, R. G. (1987), "A Theory for the Choice of Exchange Medium in Mergers and Acquisitions", *The Journal of Business*, **60**(1): 21

Iliev, P. (2010), "The Effect of SOX Section 404: Costs, Earnings Quality and Stock Prices", *Journal of Finance*, **65**(3): 1163-1196

Jamrozinski, M. (2009), "Set apart the good deals from the bad: Focused due diligence is the key to successful M&A activity", Deloitte & Touche LLP Retrieved on July 27th, 2010, from http://www.deloitte.com/view/en_CA/ca/services/financialadvisory/matransactionservices/article/8e4c071de11fb110VgnVCM100000ba42f00aRCRD.htm.

Jones, J. J. (1991), "Earnings Management During Import Relief Investigations", *Journal of Accounting Research*, **29**(2): 193-228

Kothari, S. P., A. J. Leone and C. E. Wasley (2005), "Performance Matched Discretionary Accrual Measures", *Journal of Accounting & Economics*, **39**(1): 163-197

Koumanakos, E., C. Siriopoulos and A. Georgopoulos (2005), "Firm Acquisitions and Ernings Management: Evidence from Greece", *Managerial Auditing Journal*, **20**(7): 663

Lobo, G. J. and J. Zhou (2006), "Did Conservatism in Financial Reporting Increase after the Sarbanes-Oxley Act? Initial Evidence", *Accounting Horizons*, **20**(1): 57-73

Lobo, G. J. and J. Zhou (2010), "Changes in Discretionary Financial Reporting Behavior Following the Sarbanes-Oxley Act", *Journal of Accounting, Auditing & Finance*, **25**(1): 1-26

Louis, H. (2004), "Earnings management and the market performance of acquiring firms", *Journal of Financial Economics*, **74**(1): 121

Madura, J. and T. Ngo (2010), "How accounting fraud has changed merger valuation", *Applied Financial Economics*, **20**(12): 923-940

Meisel, S. I. (2006), "Incentives for Managing Earnings in Bank Merger Targets", *Journal of Performance Management*, **19**(3): 11

Perry, S. E. and T. H. Williams (1994), "Earnings management preceding management buyout offers", *Journal of Accounting and Economics*, **18**(2): 157-179

Pungaliya, R. S. and A. M. Vijh. (2008). "Do Acquiring Firms Manage Earnings? " Working Paper No. 1273464, SSRN eLibrary Retrieved on May 30th, 2010, from http://ssrn.com/abstract=1273464.

Rangan, S. (1998), "Earnings management and the performance of seasoned equity offerings", *Journal of Financial Economics*, **50**(1): 101-122

Rutledge, Robert W., Karim, Khondkar E. and Xiaoqin, Luo (2014) " The Effects of SOX on Firms Audited by Big-4 versus Non-Big-4 Audit Firms", *Journal of Accounting & Finance*, 14 (1): 86-102.

SEC (2002), "Sarbanes-Oxley Act of 2002. In S. a. H. o. R.", *Public Law, 107–204*: 745-810.

SEC (2003), "Report Pursuant to Section 704 of the Sarbanes-Oxley Act of 2002: 1-18" SEC

Teoh, S. H., I. Welch and T. J. Wong (1998), "Earnings management and the underperformance of seasoned equity offerings", *Journal of Financial Economics*, **50**(1): 63-99

Wilson, J. T. E. (2009), "Financial Reporting in the Sarbanes-Oxley Era: Have Reforms Improved Earnings Quality?", *Research in Business & Economics Journal*, **1**: 1-11

Zang, A. (2012), "Evidence on the Trade-off between Real Activities Manipulation and Accruals-based Earnings Management", *Accounting Review*, **87** (2): 675-703

Zhou, J. (2008), "Financial reporting after the Sarbanes-Oxley Act: Conservative or less earnings management?", *Research in Accounting Regulation*, **20**: 187-192

Tables and Figures

Table 1: Sample selection criteria

Criteria	Operator	Description	Count
Acquirer / Target nations	*Include*	US	205,661
Date announced	*Between*	01/01/1999 to 12/31/2008	91,249
Deal status	*Include*	Completed	70,018
Acquirer / Target listing status	*Include*	Public	4,273
Acquirer / Target SIC	*Exclude*	Financial sector (SIC 60-69)	2,508
Deal value	*Between*	$1 million to HI	2,296
% shares owned prior announcement	*Between*	0 to 50%	2,230
% shares owned after transaction	*Between*	50% to 100%	1,421
Firm's identifier mismatch	*Exclude*	8-CUSIP	704

Table 2: Sample distribution

Panel A: Deals distribution by year

	Freq.	*%*
1999	83	11.8
2000	130	18.5
2001	102	14.5
2002	63	9.0
2003	62	8.8
2004	59	8.4
2005	64	9.1
2006	53	7.5
2007	55	7.8
2008	33	4.7
Total	704	100.0

Panel B: Deals distribution by payment method

	Total		Pre-SOX		Post-SOX	
	Freq.	*%*	*Freq.*	*%*	*Freq.*	*%*
Pure cash	268	38.1	123	32.5	145	44.5
Non-cash Shares	436	61.9	255	67.5	181	55.5
Total	704	100.0	378	100.0	326	100.0

Panel C: Deals distribution by target relatedness to acquirer

	Total		Pre-SOX		Post-SOX	
	Freq.	*%*	*Freq.*	*%*	*Freq.*	*%*
Related	457	64.9	240	63.5	217	66.6
Unrelated	247	35.1	138	36.5	109	33.4
Total	704	100.0	378	100.0	326	100.0

Panel D: Sample distribution by acquirer and target industry

SIC Division Group	Acquirers		Targets	
	Freq.	*%*	*Freq.*	*%*
SIC 10 - SIC 14: Mining	48	6.8	45	6.4
SIC 15 - SIC 17: Construction	0	0.0	3	0.4
SIC 20 - SIC 39: Manufacturing	356	50.6	334	47.4
SIC 40 - SIC 49: Transportation, communications, and utilities	74	10.5	65	9.2
SIC 50 - SIC 51: Wholesale trade	12	1.7	11	1.6
SIC 52 - SIC 59: Retail trade	15	2.1	18	2.6
SIC 70 - SIC 89: Service industries	198	28.1	227	32.2
SIC 91 - SIC 99: Public Administration	1	0.1	1	0.1
Total	704	100.0	704	100.0

Table 3 Sample descriptive statistics

Panel A: Descriptive statistics of the overall acquirers

	Total (N=704)			Pre-SOX (N=378)			Post-SOX (N=326)		
	Mean	*Median*	*STD*	*Mean*	*Median*	*STD*	*Mean*	*Median*	*STD*
EM_{j-1}	0.3224	0.0578	5.0702	0.3021	0.2482	5.0265	0.3483	-0.1788	5.1353
EM_{j-2}	0.3952	0.0526	4.6661	0.2840	0.3263	5.3167	0.5114	-0.0464	3.8777
C2	0.6480	0.1115	6.7614	0.4894	0.1272	7.2631	0.8112	0.1115	6.2140
EM_{j-3}	0.1772	0.0563	5.1275	-0.1832	0.0273	5.6658	0.4869	0.0564	4.6038
C3	0.8589	0.1133	8.2218	0.2437	0.0620	9.1300	1.4107	0.1948	7.2880
EM_{j-4}	-0.2247	-0.0240	6.0134	-0.3541	0.3920	6.5623	-0.1283	-0.3390	5.5805
C4	0.8270	-0.1459	10.7007	0.1154	-0.0804	11.4741	1.4038	-0.2255	10.0190
Size ($mil)	8,313.1	1,342.8	2,1824.7	7,857.6	1,287.9	2,2956.1	8,834.8	1,466.6	2,0476.1
Profitability	-0.0409	0.0459	0.7272	-0.0780	0.0387	0.9726	0.0015	0.0488	0.2218
Leverage	0.4428	0.4360	0.2377	0.4332	0.4350	0.2249	0.4536	0.4370	0.2514

Panel B: Descriptive statistics of non-cash acquirers

	Total (N=436)			Pre-SOX (N=255)			Post-SOX (N=181)		
	Mean	*Median*	*STD*	*Mean*	*Median*	*STD*	*Mean*	*Median*	*STD*
EM_{j-1}	0.4191	0.0625	5.3525	0.3010	0.2548	5.2507	0.5880	-0.1694	5.7415
EM_{j-2}	0.5163	0.2465	5.1132	0.3668	0.7031	6.1100	0.6982	-0.0951	4.0162
C2	0.8168	0.4037	7.1384	0.4953	0.7654	7.7450	1.1966	0.4037	6.7150
EM_{j-3}	0.2448	0.1067	5.7796	-0.2863	0.0008	6.5649	0.7725	0.1600	5.0623
C3	1.0886	0.6739	9.0072	0.2146	0.6740	10.1737	1.9447	0.8200	7.9779
EM_{j-4}	-0.4911	0.0061	6.6060	-0.6723	0.4054	7.8413	-0.3430	-0.0406	5.5671
C4	0.7421	-0.1154	11.5098	-0.2436	0.4859	12.9965	1.5960	-0.0832	10.2098
Size ($mil)	6,629.1	897.2	2,2055.3	8,876.3	903.6	3,7035.0	5,335.7	719.6	1,7959.5
Profitability	-0.1053	0.0269	0.9132	-0.1565	0.0210	1.2177	-0.0524	0.0309	0.2728
Leverage	0.4404	0.4060	0.2646	0.4005	0.3765	0.2302	0.4755	0.4240	0.3050

Panel C: Descriptive statistics of targets

	Total (N=704)			Pre-SOX (N=378)			Post-SOX (N=326)		
	Mean	*Median*	*STD*	*Mean*	*Median*	*STD*	*Mean*	*Median*	*STD*
EM_{j-1}	0.0049	-0.0002	5.8626	-0.7323	-0.5171	5.9775	0.8222	0.7033	5.6383
EM_{j-2}	-0.2253	-0.0944	6.8639	-0.5066	-0.1043	7.1949	0.0660	-0.0767	6.5120
C2	-0.1105	-0.1947	6.9509	-1.1079	-0.5790	7.2552	0.9174	0.5408	6.4856
EM_{j-3}	0.0504	0.1711	6.0495	-0.1813	0.1184	4.5984	0.2659	0.3038	7.1470
C3	-0.0793	-0.2541	8.2141	-1.2845	-1.3263	7.9559	1.0804	0.8324	8.3159
EM_{j-4}	0.8193	0.3830	6.2526	1.2252	0.4519	7.9586	0.4853	0.3678	4.3758
C4	0.9010	0.8689	10.297	0.2241	0.2058	11.8308	1.4709	1.6972	8.7999
Size ($mil)	938.6	115.6	3,424.7	858.5	101.4	2,931.2	1,033.6	136.4	3,934.0
Profitability	-0.4371	0.0015	4.8994	-0.5860	-0.0227	6.4075	-0.2597	0.0155	1.9242
Leverage	1.8258	0.4270	33.640	2.8850	0.4220	45.5764	0.5589	0.4270	0.8424

Panel D: Descriptive statistics of deals

	Total (N=704)			Pre-SOX (N=378)			Post-SOX (N=326)		
	Mean	*Median*	*STD*	*Mean*	*Median*	*STD*	*Mean*	*Median*	*STD*
Deal value($mil)	1,566.9	234.6	5,531.3	1,407.4	212.4	5,060.3	1,752.0	270.1	6,034.1
Premium	49.47	34.46	101.03	56.12	42.26	129.47	41.65	30.17	49.01
Relative sales size	97.60	5.870	428.19	90.94	6.370	296.39	105.47	5.170	544.74
Offer to target EPS	91.75	29.01	346.49	71.69	26.29	161.93	110.06	30.14	453.47

.

Table 4: One-sample test of the acquirers' earnings management

Earnings management proxies	Total (N=704)		Pre SOX (N=378)		Post SOX (N=326)	
	Mean *(t-value)*	Median *(Wilcoxon-Z)*	Mean *(t-value)*	Median *(Wilcoxon-Z)*	Mean *(t-value)*	Median *(Wilcoxon-Z)*
EM_{j-1}	0.3224 *(1.53)*	0.0578 *(0.97)*	0.3021 *(1.08)*	0.2482* *(-1.66)*	0.3483 *(1.08)*	-0.1788 *(-0.50)*
EM_{j-2}	0.3952** *(1.96)*	0.0526 * *(1.77)*	0.2840 *(0.89)*	0.3263 *(-1.31)*	0.5114** *(2.14)*	-0.0464 *(-1.06)*
C2	0.6480** *(2.11)*	0.1115 *(1.04)*	0.4894 *(1.06)*	0.1272 *(-0.72)*	0.8112** *(2.02)*	0.1115 *(-0.65)*
EM_{j-3}	0.1772 *(0.76)*	0.0563 *(0.78)*	-0.1832 *(-0.49)*	0.0273 *(-0.11)*	0.4869* *(1.72)*	0.0564 *(-1.17)*
C3	0.8589** *(2.20)*	0.1133* *(1.91)*	0.2437 *(0.39)*	0.0620 *(-1.00)*	1.4107*** *(2.95)*	0.1948* *(-1.67)*
EM_{j-4}	-0.2247 *(-0.79)*	-0.0240 *(-0.18)*	-0.3541 *(-0.75)*	0.3920 *(-1.00)*	-0.1283 *(-0.37)*	-0.3390 *(-0.85)*
C4	0.8270 *(1.57)*	-0.1459 *(-1.51)*	0.1154 *(0.14)*	-0.0804 *(-1.19)*	1.4038** *(2.11)*	-0.2255 *(-0.95)*

Table 5: Two-sample test of earnings management differences for the acquirers by SOX

Earnings management proxies	Pre-SOX (N=378) Mean (Median)	Post-SOX (N=326) Mean (Median)	Difference *(Post – Pre)* Mean (Median)	*t-value*	*Wilcoxon-Z*
EM_{j-1}	0.3021(0.3022)	0.3483(-0.1788)	0.0462(-0.481)	*0.10*	*1.48*
EM_{j-2}	0.2840(0.3263)	0.5114(-0.0464)	0.2274(-0.3727)	*0.56*	*0.21*
C2	0.4894(0.1273)	0.8112 (0.1115)	0.3218(-0.0158)	*0.52*	*0.19*
EM_{j-3}	0.1830(0.0273)	0.4869 (0.0564)	0.3039(0.0291)	*1.44*	*0.84*
C3	0.2437(0.0620)	1.4107 (0.1948)	1.1670(0.1328)	*1.47*	*0.46*
EM_{j-4}	-0.354 (0.3920)	-0.128 (-0.3390)	0.2260(-0.7310)	*0.39*	*-1.33*
C4	0.1154(-0.0804)	1.4038(-0.2255)	1.2884(-0.1451)	*1.21*	*-0.03*

Table 6: One-sample test of earnings management for the acquirers' by the method of payment and SOX

Panel A: Pure cash acquirers

Earnings management proxies	Total (N=268)		Pre-SOX (N=123)		Post-SOX (N=145)	
	Mean *(t-value)*	Median *(Wilcoxon-Z)*	Mean *(t-value)*	Median *(Wilcoxon-Z)*	Mean *(t-value)*	Median *(Wilcoxon-Z)*
EM_{j-1}	0.1364	0.0469	0.3048	0.1132	-0.0370	-0.0774
	(-0.43)	*(0.23)*	*(0.63)*	*(0.39)*	*(-0.09)*	*(0.72)*
EM_{j-2}	0.1732	-0.0544	0.0956	-0.1686	0.2348	0.0201
	(-0.64)	*(0.11)*	*(0.23)*	*(0.45)*	*(0.65)*	*(0.32)*
C2	0.3051	-0.4769	0.4748	-0.8425	0.1730	-0.0754
	(0.65)	*(0.86)*	*(0.60)*	*(0.67)*	*(0.3)*	*(0.45)*
EM_{j-3}	0.0570	-0.0175	0.0466	-0.0082	0.0638	-0.0766
	(-0.2)	*(0.24)*	*(-0.11)*	*(0.09)*	*(0.17)*	*(0.38)*
C3	0.4250	-0.717	0.3069	-1.0335	0.5147	-0.3035
	(0.81)	*(0.75)*	*(0.35)*	*(0.61)*	*(0.79)*	*(0.50)*
EM_{j-4}	0.2171	-0.2321	0.2581	0.4309	0.1911	-0.500
	(-0.58)	*(0.12)*	*(-0.67)*	*(0.85)*	*(0.34)*	*(0.87)*
C4	0.9810	-0.1565	0.8393	-0.1371	1.0827	-0.2255
	(1.30)	*(0.29)*	*(0.83)*	*(0.004)*	*(1.01)*	*(0.35)*

Panel B: Non- cash acquirers

Earnings management proxies	Total (N=436)		Pre-SOX (N=255)		Post-SOX (N=181)	
	Mean *(t-value)*	Median *(Wilcoxon-Z)*	Mean *(t-value)*	Median *(Wilcoxon-Z)*	Mean *(t-value)*	Median *(Wilcoxon-Z)*
EM_{j-1}	0.4191	0.0625	0.3010	0.2548*	0.5880	-0.1694
	(-1.52)	*(1.31)*	*(0.88)*	*(1.71)*	*(1.29)*	*(0.17)*
EM_{j-2}	0.5163*	0.2465**	0.3668	0.7031*	0.6982**	-0.0951
	(1.88)	*(2.15)*	*(-0.86)*	*(1.74)*	*(2.20)*	*(1.08)*
C2	0.8168**	0.4037**	0.4953	0.7654*	1.1966**	0.4037
	(2.06)	*(2.34)*	*(0.87)*	*(1.74)*	*(2.21)*	*(1.54)*
EM_{j-3}	0.2448	0.1067	-0.2863	0.0008	0.7725*	0.16*
	(0.75)	*(1.11)*	*(-0.56)*	*(0.16)*	*(1.93)*	*(1.80)*
C3	1.0886**	0.6739***	0.2146	0.674	1.9447***	0.82**
	(2.05)	*(2.7)*	*(0.26)*	*(1.48)*	*(2.97)*	*(2.31)*
EM_{j-4}	-0.4911	0.0061	-0.6723	0.4054	-0.3430	-0.0406
	(-1.25)	*(0.31)*	*(-0.98)*	*(0.58)*	*(-0.77)*	*(0.31)*
C4	0.7421	-0.1154	-0.2436	0.4859	1.5960*	-0.0832
	(1.05)	*(1.42)*	*(-0.21)*	*(0.81)*	*(1.88)*	*(1.09)*

Table 7: Two-sample test of earnings management differences for the non-cash acquirers by SOX

Earnings management proxies	Pre-SOX (N=255) Mean (Median)	Post-SOX (N=181) Mean (Median)	Difference *(Post – Pre)* Mean (Median)	*t-value*	*Wilcoxon-Z*
EM_{j-1}	0.3010 (0.2548)	0.5880 (-0.1694)	0.287(-0.4242)	*0.51*	*0.81*
EM_{j-2}	0.3668 (0.7031)	0.6982 (-0.0951)	0.3314(-0.7982)	*0.60*	*0.64*
C2	0.4953 (0.7654)	1.1966 (0.4037)	0.7013(-0.3617)	*0.88*	*0.40*
EM_{j-3}	-0.2863(0.0008)	0.7725 (0.1600)	1.0588(0.1592)	*1.66**	*0.34*
C3	0.2146 (0.6740)	1.9447 (0.8200)	1.7301(0.1460)	*1.65**	*0.42*
EM_{j-4}	-0.6723(0.4054)	-0.3430(-0.0406)	0.3293(-0.4460)	*0.42*	*1.25*
C4	-0.2436(0.4859)	1.5960 (-0.0832)	1.8396(-0.5691)	*1.30*	*0.06*

Table 8: One-sample test of the targets' earnings management

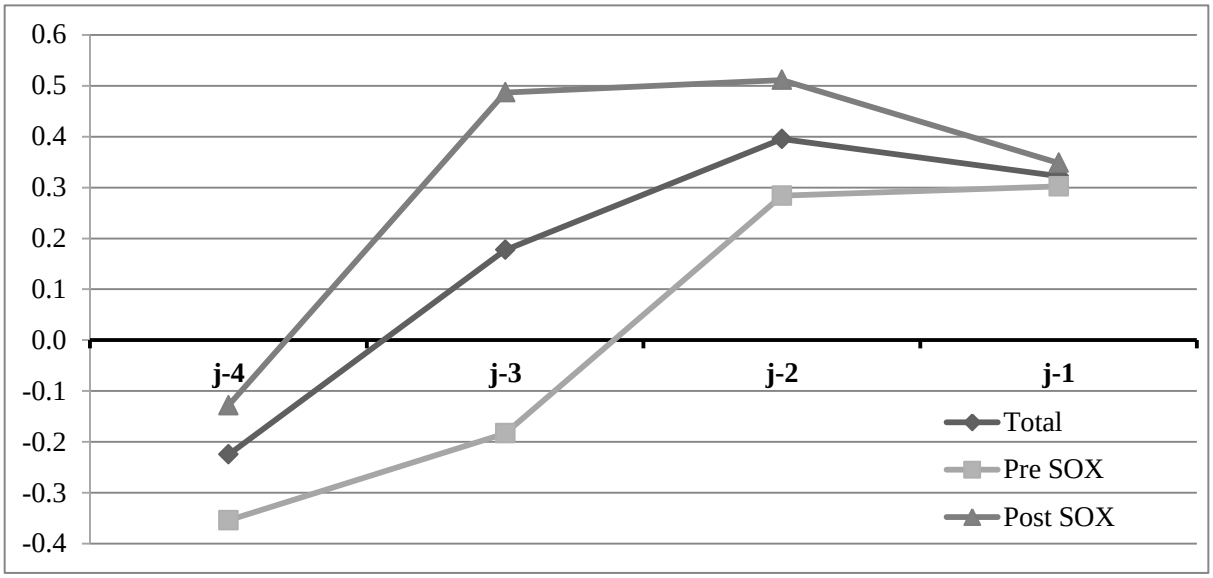
Earnings management proxies	Total (N=704)		Pre-SOX (N=378)		Post-SOX (N=326)	
	Mean *(t-value)*	Median *(Wilcoxon-Z)*	Mean *(t-value)*	Median *(Wilcoxon-Z)*	Mean *(t-value)*	Median *(Wilcoxon-Z)*
EM_{j-1}	0.0049 *(0.02)*	-0.0002 *(0.002)*	-0.7323* *(-1.66)*	-0.5171* *(-1.95)*	0.8222* *(1.88)*	0.7033** *(2.18)*
EM_{j-2}	-0.2253 *(-0.61)*	-0.0944 *(1.10)*	-0.5066 *(-0.93)*	-0.1043 *(-0.92)*	0.0660 *(0.13)*	-0.0767 *(0.68)*
C2	-0.1105 *(-0.29)*	-0.1947 *(0.416)*	-1.108** *(-1.98)*	-0.579* *(-1.81)*	0.9174* *(1.81)*	0.5408 *(1.35)*
EM_{j-3}	0.0504 *(0.15)*	0.1711 *(1.30)*	-0.1813 *(-0.50)*	0.1184 *(-0.04)*	0.2659 *(0.49)*	0.3038* *(1.80)*
C3	-0.0793 *(-0.17)*	-0.2541 *(0.30)*	-1.285** *(-1.99)*	-1.326** *(-2.23)*	1.0804 *(1.64)*	0.8324* *(1.89)*
EM_{j-4}	0.8193**	0.3830**	1.2252*	0.4519*	0.4853	0.3678

	(2.34)	*(2.43)*	*(1.85)*	*(1.89)*	*(1.47)*	*(1.58)*
C4	0.9010 *(1.49)*	0.8689 *(1.38)*	0.2241 *(0.22)*	0.2058 *(-0.46)*	1.4709** *(2.10)*	1.697** *(2.42)*

Table 09: Two-sample test of earnings management differences for the targets by SOX

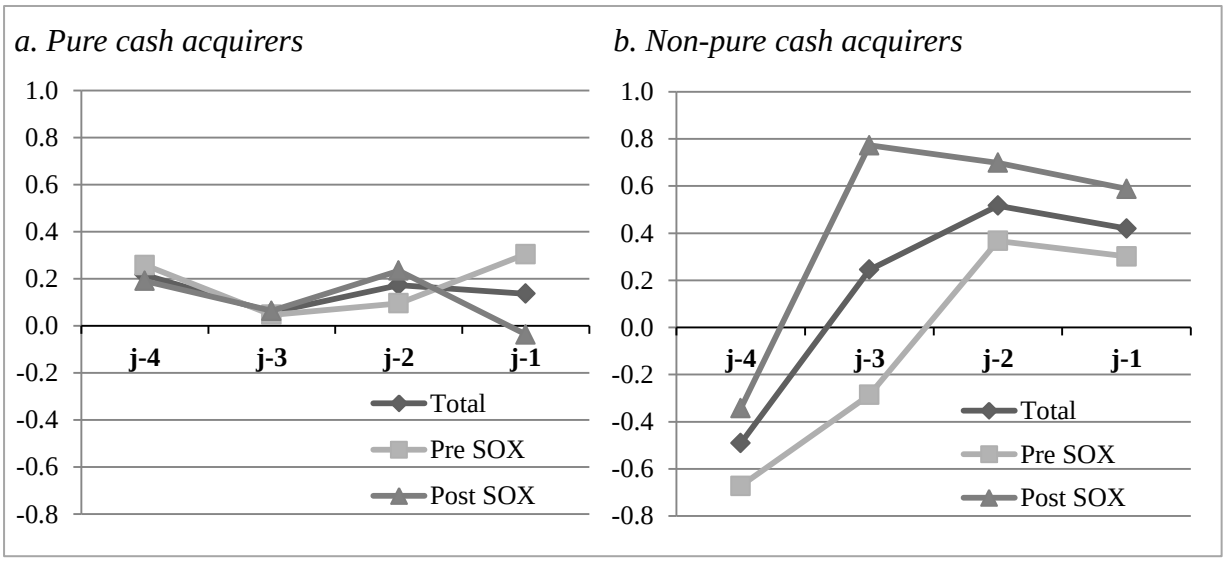
Earnings management proxies	Pre-SOX (N=378) Mean (Median)	Post-SOX (N=326) Mean (Median)	Difference *(Post – Pre)* Mean (Median)	*t-value*	*Wilcoxon-Z*
EM_{j-1}	-0.732(-0.517)	0.8221(0.7032)	1.5541(1.2202)	*2.50***	*2.88****
EM_{j-2}	-0.506(-0.104)	0.0660(-0.076)	0.5720(0.0280)	*0.78*	*0.24*
C2	-1.107(-0.579)	0.9173(0.5407)	2.0243(1.1197)	*2.69****	*2.25***
EM_{j-3}	-0.181(0.1183)	0.2659(0.3038)	0.4469(0.1855)	*0.67*	*1.25*
C3	-1.284(-1.326)	1.0804(0.8323)	2.3644(2.1583)	*2.57***	*3.00****
EM_{j-4}	1.2251(0.4519)	0.4852(0.3677)	-0.7399(-0.0842)	*-1.05*	*-0.41*
C4	0.2240(0.2057)	1.4708(1.6971)	1.2468(1.4914)	*1.03*	*1.94***

Figure 1: Acquirers' abnormal accruals prior to M&A



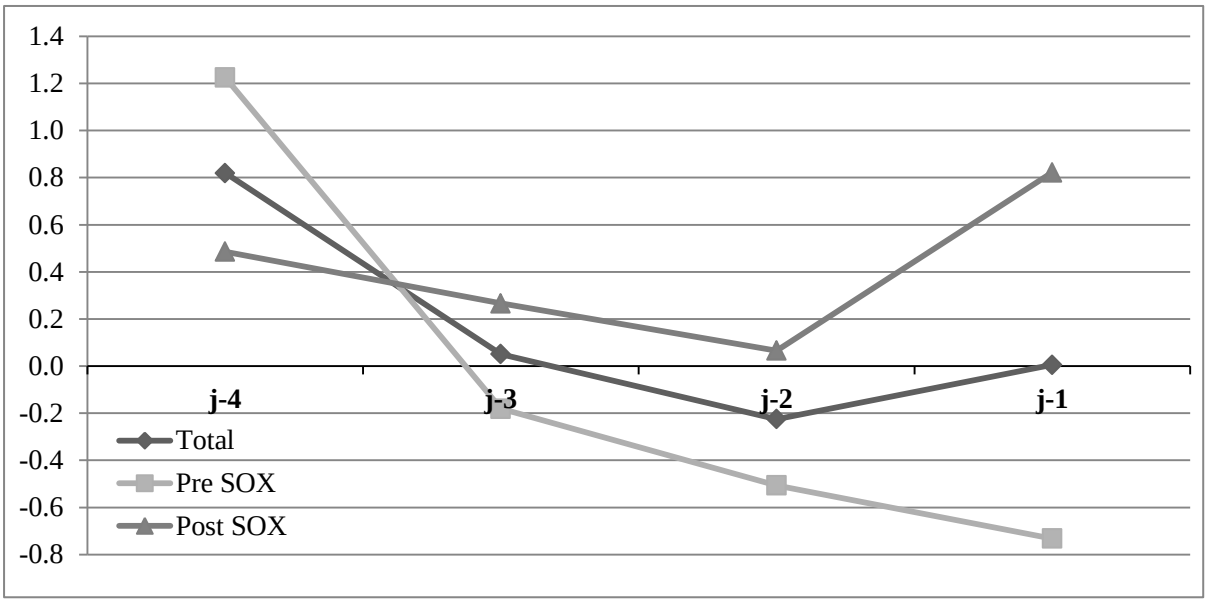
Notes: The figure depicts the mean abnormal accruals percent detected in the quarterly earnings of the overall sample of acquirers (N=704) as well as the pre and post-SOX subsamples (N=378 and 326 respectively) over the last four fiscal quarters prior to the M&A announcement.

Figure 2: Acquirers' abnormal accruals prior to M&A by payment method



Notes: The figure depicts the mean abnormal accruals percent detected in the quarterly earnings of the overall sample of acquirers as well as the pre and post-SOX subsamples over the last four fiscal quarters prior to the M&A announcement after splitting acquirers by the method of payment.

Figure 3: Targets' abnormal accruals prior to M&A



Notes: The figure depicts the mean abnormal accruals percent detected in the quarterly earnings of the overall sample of targets (N=704) as well as the pre and post-SOX subsamples (N=378 and 326, respectively) over the last four fiscal quarters prior to the M&A announcement.

Notes

[1] As a check for the method used in calculating the current accruals, the abnormal accruals are also calculated using the cash flow method for comparison, by which current accruals are calculated as $CACC_{i,i} = IBCQ_{i,i} - OANCFQ_{i,i} + DPCQ_{i,i}$, where $IBCQ_{i,i}$ is income before extraordinary items appeared in the statement of cash flow of firm *i* at quarter *j* and this is calculated using the *Compustat* year-to-date item of a mnemonic code *IBCY*, $OANCFQ_{i,i}$ is net cash flow from operating activities of firms *i* on quarter *j* but calculated using the year-to-date item of a mnemonic code *OANCFY* and $DPCQ_{i,i}$ is the depreciation and amortisation reported in the statement of cash flow of firm *i* on quarter *j* but calculated using the year-to-date item of a mnemonic code *DPCY*. The correlation coefficients are examined when relating abnormal accruals calculated using balance sheet method and cash flow method. *Pearson's* coefficients range from 0.237 to 0.555 while *Spearman's* coefficients range from 0.453 to 0.628 for both acquirers and targets. The coefficients found positive and very significant ($P<0.00001$) indicating additional robustness of the findings.

[2] In late 2007 *Compustat* switched to Xpressfeed delivery mechanism (XPF) using mnemonic coding to data items.

[3] This study follows Kothari *et al*. (2005) recommendation of employing portfolio performance matching instead of adding a performance measure as a regressor to the accrual regression model for more reliable results.

[4] The sampling period cut-off point (31/12/2008) is determined once data collection for this study started in the beginning of 2009. The ten years period is chosen an ad hoc sampling period to include observations before and after SOX.

[5] Baik *et al*. (2007) recommends that the estimation risk in the valuation of a private target is higher than that of a public target. Thus, this may motivate the acquirer to apply much more aggressive accounting in manipulating earnings prior to acquiring a private target, in an attempt to avoid overpayment.